

New Species of Trichoptera from Western North America

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The new species described herein have been selected for description since they are interesting additions to the trichopterous fauna of western United States. The new *Tinodes* represents the eleventh species, the new *Homoplectra* the eighth species and the new *Neothremma* the sixth species in these typically western genera. The peculiar limnephilid *Cryptochia* is very rare in collections and is known from only six western species; an interesting *Cryptochia* is described herein. The peculiar new *Rhyacophila* presents an interesting departure from described species and may be a relict species.

Unless stated otherwise, types of the new species will be deposited in the California Academy of Sciences, San Francisco.

***Rhyacophila tamalpaisi*, new species**

This new species may be a member of the *valuma* Milne complex. The shape of the clasper bears similarity to *colonus* Schmid, to a lesser degree there is some resemblance to the aedeagal structure of all three species in the complex. However, this new species differs from all *Rhyacophila* in the shape of the tenth tergum and anal sclerite, in the primitive aedeagal structure, and in the incised apicoventral portion of the basal segment of the clasper. When the female is known it is probable that the species should not be aligned to the *valuma* group.

Male.—Length 5.5 mm. General color of legs, antennae and thorax brownish, wings light brown, veins and pterostigma distinct. Legs, especially tarsal segments of last pair with heavy pilosity. Genitalia as in Fig. 1. Fifth segment with a prominent lobe. Segments seven and eight bearing prominent medial carina, Fig. 1A. Ninth segment narrowed ventrad, mesal portion sternum with deep incision. Tenth segment, lateral aspect, trianguloid, dark pigment; from dorsal view, Fig. 1B, distal margin narrowly incised, slightly concave laterally, mesal area with dark pigmentation. Anal sclerite, *as*, small, elongate, dorsal margin arcuate. Basal segment claspers long, parallel-sided, distally narrowed to accommodate a deep incision of ventral margin into which (possibly) the apical segment would repose when moved ventrad; apical segment declivent, acute mesad-curved spine along dorsal margin, distal margin truncate, apicomeral surface bearing dense pad of dark minute setae. Aedeagal complex, lateral aspect, Fig. 1C, with lightly sclerotized dorsal tubular structure acuminate to oblique apex; large ventral structure tubular, narrowed distally. Viewed laterally structure appears

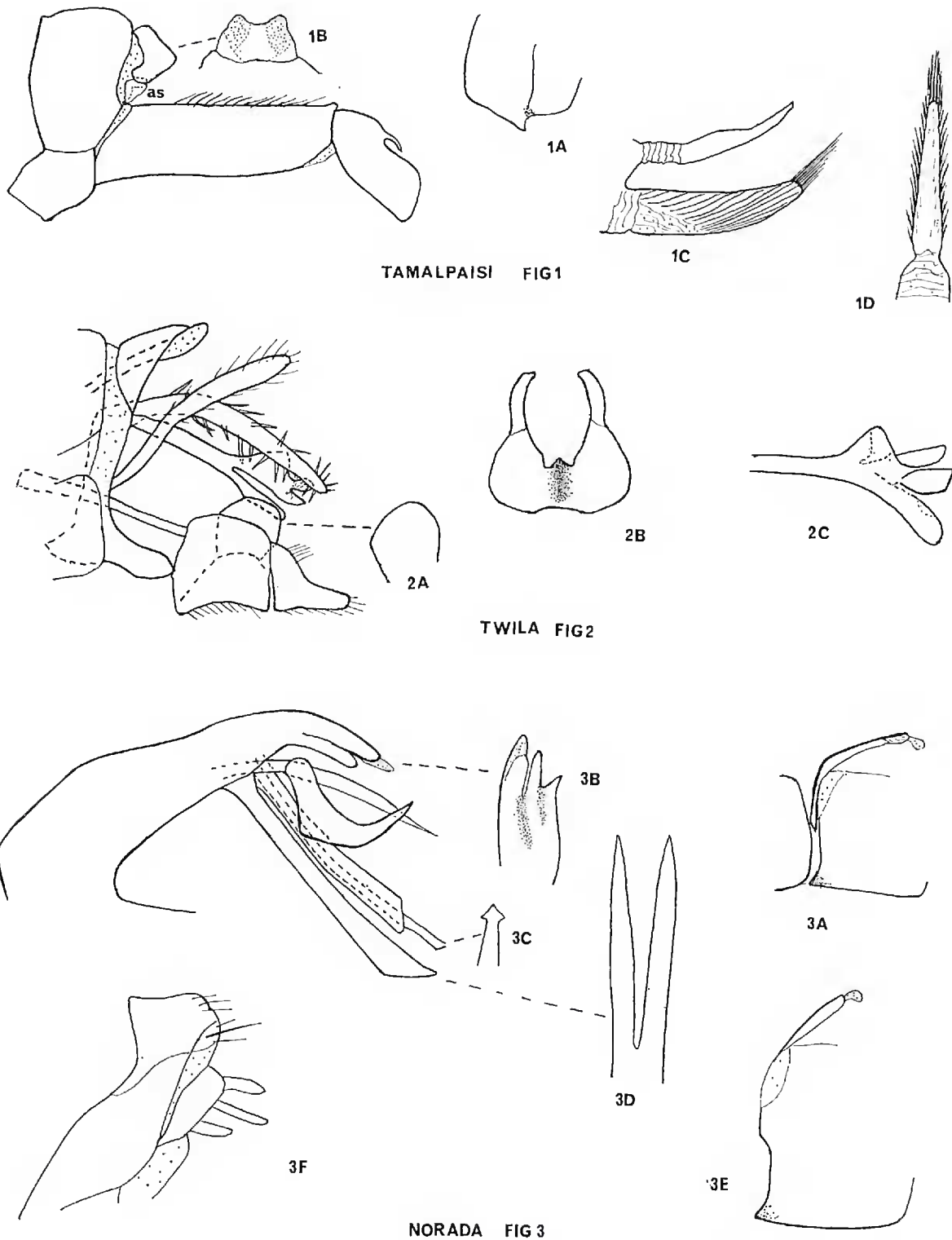


FIG. 1. *Rhyacophila tamalpasi* Denning, male genitalia, lateral view. 1A, sternum, segment 8. 1B, tenth tergum, dorsal view. 1C, aedeagal structure, lateral aspect. 1D, phallus ventral view. FIG. 2. *Tinodes twila* Denning, male genitalia, lateral aspect. 2A, lobes arising from meson basal claspers. 2B, claspers, ventral aspect. 2C, phallus, lateral view. FIG. 3. *Homoplectra norada* Denning, male genitalia, lateral view. 3A, filamentous process, segment 5. 3B, tenth tergum, dorsal view. 3C, phallus, dorsal view. 3D, ventral sheath, ventral view. 3E, segment 5, lateral view. 3F, female, lateral aspect.

striated with longitudinal brown lines, apex with dense tuft of long stout spines, from ventral aspect, Fig. 1D, the dense lateral and apical flattened setae easily discernible.

Holotype male.—Fern Creek, Mt. Tamalpais State Park, Marin County, California, 21 April 1974, Paul A. Peterson. Collection was made during high water. Although the collection site was recollected several times, no additional specimens were collected. To be deposited California Academy of Science, San Francisco, California.

Tinodes twila, new species

This represents the eleventh North American species; although the genus is cosmopolitan these described species are known only from western United States and adjoining Mexico. The majority of these species are found in the Pacific coastal areas. *T. twila* is readily distinguished by the short claspers and its circular mesal plates, and by the aedeagus and its apical pair of leaflike lobes.

Male.—Length 6 mm. Wings brownish, head, thorax and legs slightly darker, tarsal segments setose. Maxillary palpi with dense, short black setae. Spurs 2-4-4, those of forelegs densely setose. Genitalia as in Fig. 2. Anterior portion ninth sternum covered by eighth, apex ninth tergum terminated with membranous sheath, difficult to discern. Cerci fusiform, short, directed dorsocaudad. Basal segment clasper almost quadrate, short, lobes arising from meson coalesced along ventral margin, from lateral aspect, Fig. 2A, lobes platelike, broadly ovate; apical segment elongated ventrally into slender obtuse lobe, convergent from ventral view, Fig. 2B. Phallus sheath fusiform, curved ventrad, bearing prominent spines; basal portion phallus slender, tubular, distally enlarged into prominent dorsal triangular protuberance, an apical pair leaflike processes and an elongated ventral lobe, Fig. 2C.

Holotype male.—Julia Pfeiffer Burns State Park, McWay Creek, Hwy. 1, Monterey County, California, 25 July 1974, D. G. Denning; paratype male, same data as for holotype; paratype male, unnamed creek, Hwy. 1, north of Lucas, Monterey County, California, 25 July 1974, D. G. Denning. Collections made in redwood, *Sequoia sempervirens*, grove.

Homoplectra norada, new species

This is the eighth species described in the genus. All known species: *H. nigripennis* Banks, *oaklandensis* (Ling), *alsea* Ross, *shasta* Denn., *spora* Denn., *luchia* Denn. and *schuhi* Denn. have been recorded only from Oregon and California. A majority of the species have been collected in cool Pacific coastal areas. *H. norada* is related to *luchia* differing from it in the short blunt dorsal prong, in the short filamentous process ventrad to it, in the aedeagal sheath and other details.

Male.—Length 8-8.5 mm. General color of head, thorax and abdomen dark brown; wings brownish, concolorous; setae of head and thorax aureous. Filamentous lobe of fifth segment (probably the pheromone receptor) curved laterad.

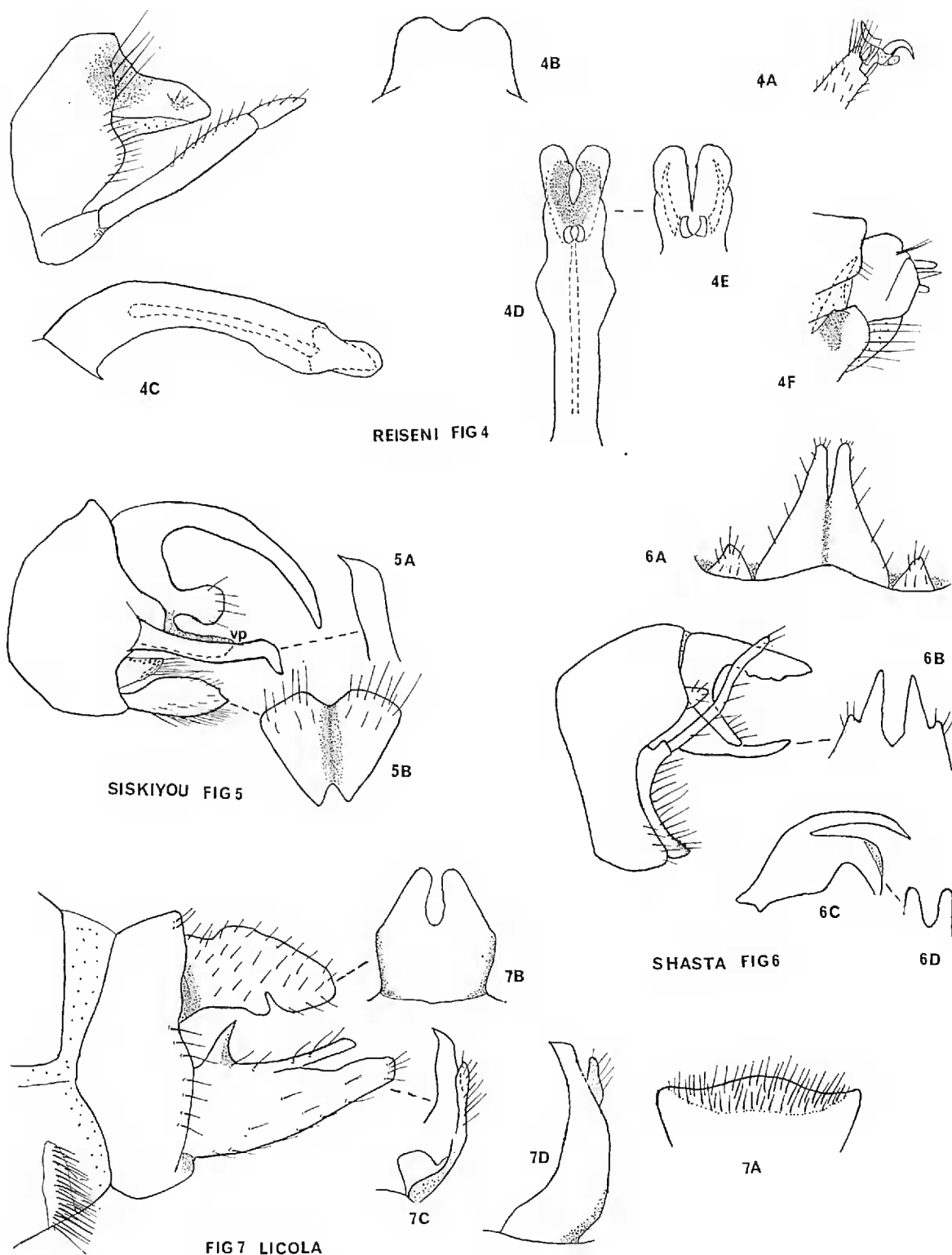


FIG. 4. *Hydropsyche reiseni* Denning, male genitalia, lateral aspect. 4A, fore-leg tarsal claw, mesal view. 4B, tenth tergum, dorsal aspect. 4C, phallus, lateral aspect, 4D, ventral view, 4E, dorsal view, 4F, female, lateral aspect. FIG. 5. *Neothremma siskiyou* Denning, male genitalia, lateral view. 5A, ventral view of convergent apices. 5B, fused claspers, ventral view. FIG. 6. *Cryptochia shasta* Denning, male genitalia, lateral aspect. 6A, dorsal aspect of tergum 10 and cerci, c. 6B, ventral lobe of tenth tergum. 6C, aedeagal complex, lateral view. 6D, apical portion of phallus, ventral view. FIG. 7. *Lepidostoma licola* Denning, male genitalia, lateral aspect. 7A, sternum 8, ventral view. 7B, tenth tergum, dorsal view. 7C, clasper dorsal view. 7D, clasper ventral view.

A light membranous bulb-like process apically, Fig. 3A; near center of segment 5 and 6 a dark brown minute invaginated area present. Genitalia as in Fig. 3. Diagnostic characters of aedeagal structure as follows: (1), a heavily sclerotized dark brown dorsal prong (tenth tergum?) curved ventrocaudad, bearing closely appressed spurs; from dorsal aspect, Fig. 3B, structure asymmetrical, apices approximate and terminated in a semimembranous sheath; (2), a pair of narrow, short, acuminate semimembranous non-pigmented processes; (3), a dark brown stout heavily sclerotized prong, acute, curved dorsad; (4), phallus long, slender, the tubular internal structure projected beyond apex, from dorsal view, Fig. 3C, apex acute; (5), the slender trough-like ventral structure into which the phallus reposes, furcate about half its length, Fig. 3D.

Female.—Length 9–9.5 mm. Similar to male except usual antigenic characters. Segment 5 with a short filamentous process projected dorsolaterad, lightly pigmented, apex bearing minute membranous bulb, Fig. 3E. Genitalia as in Fig. 3F. Sternum 8 dorsal margin heavily pigmented, dorsocaudal corner subacute. Ninth segment annular, tergum indistinctly delineated. Tenth tergum slender, lightly pigmented, bearing three semimembranous tubular processes.

Holotype male.—Creek near Panoramic Hwy., Stinson Beach, Marin County, California, 24 February 1974, Paul A. Peterson. Allotype, same data as for holotype. Paratypes, 5 males, 3 females, same data; 1 male Mt. Tamalpais, Marin County, California, 25 May 1974, D. G. Denning; 2 males, Samuel P. Taylor State Park, Marin County, California, 25 May 1975, D. G. Denning. Holotype, allotype to be deposited California Academy Sciences, San Francisco, California.

***Hydropsyche reiseni*, new species**

This new species belongs to the *californica* Banks group and is related to *solex* Ross. Male diagnostic characters are the contour of the phallus and its mesal concavity, the shape of the claspers and tenth tergum and minor differences of the ninth segment. The female differs from other species by the position and shape of the clasper receptacle. Dr. W. A. Reisen collected this species in Honey Creek, Turner Falls Park near Davis, Oklahoma. The collection site is described by Dr. Reisen as follows: "Honey Creek is a medium sized rheocine originating from two springs fed from limestone aquifers in the Arbuckle Mountains and flowing northeasterly into the Washita River . . . two sizeable water falls, Bridal Veil Falls and Turner Falls lie within the park boundary . . ."

Male.—Length 7.5–10 mm. Wings irrorate, brownish, legs luteus, head, thorax, abdomen dark brown. Sexual dimorphism exhibited in tarsal claws, Fig. 4A. Genitalia as in Fig. 4. Ninth segment lateral lobe ovate, tergum with shallow depression extending caudad to lateral portion of tenth tergum. From lateral aspect tenth tergum directed caudad, apex subacute; from dorsal view, Fig. 4B, margin with a broad, narrow incision. Clasper distal segment short, subacute, convergent from dorsal aspect. Phallus, Fig. 4C, short, stocky, arcuate; lateral plates ovate, dark pigmented, obscuring view of mesal portion; from ventral aspect, Fig. 4D, lateral margin with distinct angulation, apical lateral lobes

rounded, approximate mesally, mesal cavity concave, mesoventral plates elongate and convergent; from dorsal view, Fig. 4E, lateral plates separated; in cleared specimens outline of mesal cavity distinct, mesoventral plates slender, slightly curved.

Female.—Length 8 mm. Identical to male in general appearance except no modification of tarsal claws. Genitalia as in Fig. 4F. Clasper groove shallow, concave; clasper receptacle long, narrow distally, directed dorsocaudad. Lateral lobe ninth segment broadly ovate.

Holotype male.—Murray County Oklahoma, Honey Creek, Turner Falls Park, 28 April 1973, W. K. Reisen. Allotype female, same data except 21 July. Paratypes, 1 male same data except 19 July; 4 males same data except 15 August; 1 male same data except 30 March; 8 males same data as for holotype; 6 males 1 female, same data as for allotype.

GENUS NEOTHREMMA BANKS (LIMNEPHILIDAE)

The five described species in the genus are confined to western Canada and United States. Members of the genus are seldom collected and species distribution is based on small numbers of specimens.

N. alicia Bank 1930. Known from Alberta, Idaho, Oregon, Utah, and Wyoming. A new record is available from Montana: Glacier National Park, Iceberg Creek, Iceberg Lake, 4 August 1972, David S. Potter.

N. didactyla Ross 1949. Known from Washington and Oregon.

N. genella Denning 1966. Recorded from Plumas County, California. A new record is available from California: Madera County, N. Fork Arline Creek, S. W. slope Madera Peak, 7800', 16 August 1971, Hugh B. Leech.

N. laloukesi Schmid 1968. Recorded from Lake Louise, Banff National Park, Alberta. This species is very similar to *alicia* Banks.

N. andersoni Wiggins 1975. Multnomah County, Oregon.

Neothremma siskiyou, new species

This new species is related to *genella* differing from it in the spherical plate and scooplike lobe arising ventrad from the dorsal sclerotized process, and several other details.

Male.—Length 6 mm. General color body, appendages tan, wing concolorous, tan. Spurs 3-3-4. First antennal segment slightly longer than length of head; maxillary palpi porrect, pilosity sparse. Front of head covered with long golden colored setae. Genitalia as in Fig. 5. Ninth segment narrowed dorsad to a narrow strap, from lateral margin a narrow elongated process present directed caudad beyond claspers; apex subacute, not forked; from ventral aspect apices convergent, Fig. 5A. This species and *N. andersoni* are the only two described species in which the apex of the lateral process of the ninth segment is not forked. Claspers short, compressed dorsally; from lateral aspect apex acute; from ventral aspect, Fig. 5B, claspers fused on meson, troughlike, coalesced claspers wide,

scooplike. Tenth tergum curved ventrad as a pair of large, heavily sclerotized lobes; at base of lobes prominent, rounded process directed caudad; phallus small, covered from view by basal lobes. Ventrad to basal lobes is a wide scooplike plate capable of dorsoventrad movement, Fig. 5, *vp*. Dorsad to base of claspers a very lightly sclerotized process developed from ninth sternum, spiculate distally and bearing numerous long light colored setae.

Holotype male.—Siskiyou County, California, road to Taylor Lake, Salmon Mts., 5750', Etna road, 19 August 1972, Hugh B. Leech. Type to be deposited California Academy Sciences, San Francisco, California.

GENUS CRYPTOCHIA ROSS (Limnephilidae)

The *Cryptochia* are rarely collected and accordingly, the distribution of the seven species comprising the genus is poorly known. Very few additions to the distributional records (Denning 1964) are available. The *Cryptochia* appear to be confined to western United States and British Columbia.

Known distribution

Cryptochia pilosa (Banks) 1907. Recorded from Washington, Oregon, Idaho, British Columbia. The only described female in the genus is of this species (Ross 1950, Schmid 1951).

C. furcata Denn. 1953. Known to occur in Washington, British Columbia and northwestern Montana. A new record is available from Montana; Missoula County, Deer Creek, 12 June 1973. David W. Potter, 1 ♂.

C. neosa Denn. 1954. Known only from Grant County, Oregon.

C. excella Denn. 1964. Known only from Kings Canyon National Park, California.

C. califica Denn. 1968. Recorded only from Sierra County, California.

C. denningi, Wiggins 1975. Recorded from Sequoia National Park, California.

C. shasta n. sp. Shasta County, California.

Records of the last five species are based on a single male. Most of the collection sites have been recollected but no additional specimens have been taken.

***Cryptochia shasta*, new species**

Male.—Length 9 mm. General color wings, thorax, abdomen dark brown. Wings with heavy blackish pilosity; prothoracic setae aureous, macrochaetae of head black. Antennae, legs with dense blackish setation. Spurs 1-3-4. Segments 3 to 5 with dark pigmented line through center, fifth segment also with circular invaginated area, segment 8 not modified. Genitalia as in Fig. 6. Ninth tergum massive, projected caudad; sternum narrow; from dorsal aspect tergum narrowed

to a band by a wide circular incision. Tenth tergum short, blunt, ventral margin irregular and pigmented black; from dorsal aspect, Fig. 6A, furcate less than half distance to base, median fusion results in a narrow brownish trough; ventral lobes digitate, closely appressed to massive darkly sclerotized ventral lobe, subacute, directed caudad, as seen from ventral aspect, Fig. 6B. Clasper, lateral aspect, with filamentous process long, reaching dorso-caudad above tenth tergum; basal portion coalescensed to ninth sternum, ventral apex black pigmented and curved slightly dorsad, from ventral aspect sclerite expanded to a wide concave plate occupying all of aedeagal cavity which forms attachment to ventral portion of aedeagus. Phallus, Fig. 6C, dorsal blades heavily sclerotized, acuminate, apex acute; ventral portion massive, dark pigmented apical portion blade-like, curved ventrad, ventral enlargement attached to mesal portion of claspers, apices obtuse from ventral aspect, Fig. 6D.

Holotype male.—Shasta County, California, creek near Castle Crags State Park, 17 May 1973, D. G. Denning.

KEY TO DESCRIBED MALES OF CRYPTOCHIA

1. Tenth segment reaching caudad considerably beyond base of clasper 2
Tenth segment short, not extending caudad beyond base of clasper ... *denningi*
2. Tenth tergite lateral lobe long, narrow; filamentous process of clasper long, reaching to or beyond tenth tergum 3
Tenth tergite lateral lobe long, wide; filamentous process of clasper short, about equal or shorter than basal portion 5
3. Ninth tergum large, elongated; aedeagus with a short ventral
process *excella*
Ninth tergum not greatly elongated; aedeagus with a large
ventral prominent process 4
4. Tenth tergum deeply furcate, ventral arm short; ventral process
phallus massive *pilosa*
Tenth tergum narrowly furcate, ventral arm long; ventral process
not massive *shasta* n.sp.
5. Ninth tergum curved caudad; tenth tergum short and obtuse; aedeagal
dorsal arms curved ventrad *califica*
Ninth tergum not curved caudad; tenth tergum subacute; aedeagal dorsal
arms not curved ventrad 6
6. Ventral process phallus long as dorsal blades, apex hamate; dorsal blades
curved only slightly ventrad *furcata*
Ventral process phallus not more than half length of dorsal blades which
are curved dorsad *neosa*

Lepidostoma licola, new species

The similarity of the tenth tergum and claspers to *L. jewetti* suggests a relationship to that species. Diagnostic differences are the distinctive spinous comb arising from the eighth segment and other differences in the aedeagal structure and tenth tergum.

Male.—Length 7–9 mm. General color brownish, wings uniformly brown, considerable pilosity. First antennal segment long, equal to length between eyes, no modifications. Maxillary palpi porrect, one segmented, abundant long setae, no modifications. Small patches of light colored scales near base of fore and hind wing, and in the small coastal cell of the forewing. Apico-ventral portion tergum eight compressed into a slender concave area; sternum eight bearing dense comb of long stout dark brown spines, projected caudoventrad, Figs. 7 and 7A. This unusual comb is similar to the spinous comb found on dorsal segments of some male *Micrasema*. Genitalia as in Fig. 7. Tenth tergum apical margin rotundate, ventral margin with short incision, resultant lobe not projected beyond ventral margin; from dorsal aspect, Fig. 7B, tergum narrowed distally to obtuse mesal lobes; entire structure quite spinous. Claspers, lateral aspect, Fig. 7, with apex truncate, basodorsal lobe acute, lateral lobe long, slender, subacute; from dorsal aspect, Fig. 7C, basodorsal lobe broad, platelike; from ventral aspect, Fig. 7D, lateral lobe not discernible. Phallus long, arcuate; bifid from ventral view; dorsal arms acuminate, heavily sclerotized, closely appressed to phallus and extending to apex.

Holotype male.—Sierra County, California, Yuba Pass, 6700', 9 July 1967. Paratypes, three males, same data as for holotype. Types to be deposited in Academy of Sciences, Golden Gate Park, San Francisco, California.

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